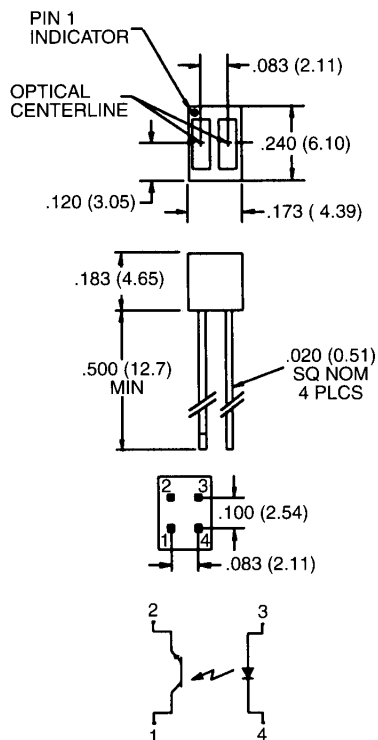




REFLECTIVE OBJECT SENSOR

OPB706A/B/C

PACKAGE DIMENSIONS



ST2156

DESCRIPTION

The OPB706A/B/C reflective sensors consist of an infrared emitting diode and an NPN silicon phototransistor mounted side by side in a black plastic housing. The on-axis radiation of the emitter and the on-axis response of the detector are both perpendicular to the face of the OPB706A/B/C. The phototransistor responds to radiation emitted from the diode only when a reflective object or surface is in the field of view of the detector.

FEATURES

- Phototransistor output.
- Unfocused for sensing diffused surfaces.
- Low cost plastic housing.
- Designed for paper path and other non-contact surface sensing.

NOTES:

1. PINS 2 AND 4 ARE TYPICALLY .050" SHORTER THAN PINS 1 AND 3.
2. DIMENSIONS ARE IN INCHES (mm).
3. TOLERANCE IS $\pm .010$ (.25) UNLESS OTHERWISE SPECIFIED.



REFLECTIVE OBJECT SENSOR

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ Unless Otherwise Specified)

Storage Temperature	-40°C to $+85^\circ\text{C}$
Operating Temperature	-40°C to $+85^\circ\text{C}$
Soldering:	
Lead Temperature (Iron)	240°C for 5 sec. ^(2,3,4)
Lead Temperature (Flow)	260°C for 10 sec. ^(2,3)
INPUT DIODE	
Continuous Forward Current	50 mA
Reverse Voltage	5.0 Volts
Power Dissipation	75 mW ⁽¹⁾
OUTPUT TRANSISTOR	
Collector-Emitter Voltage	30 Volts
Emitter-Collector Voltage	5.0 Volts
Power Dissipation	75 mW ⁽¹⁾

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless Otherwise Specified) (All measurements made under pulse conditions.)

PARAMETER	SYMBOL	MIN.	TYPE	MAX.	UNITS	TEST CONDITIONS
INPUT DIODE						
Forward voltage	V_F	—		1.70	V	$I_F = 20\text{ mA}$
Reverse Leakage Current	I_R	—		100	μA	$V_R = 5.0\text{ V}$
OUTPUT TRANSISTOR						
Collector-Emitter Breakdown	BV_{ECO}	30		—	V	$I_C = 100\text{ }\mu\text{A}$, $E_e = 0$
Collector-Emitter Breakdown	BV_{CEO}	5		—	V	$I_E = 100\text{ }\mu\text{A}$, $E_e = 0$
Collector-Emitter Leakage	I_{CEO}	—		100	nA	$V_{CE} = 10.0\text{ V}$, $E_e = 0$
COUPLED						
On-State Collector Current						
OPB706A	$I_{C(ON)}$	500		—	μA	$I_F = 20\text{ mA}$, $V_{CC} = 5.0\text{ V}$, $D = .050''$ ^(5,7)
OPB706B	$I_{C(ON)}$	350		—	μA	$I_F = 20\text{ mA}$, $V_{CC} = 5.0\text{ V}$, $D = .050''$ ^(5,7)
OPB706C	$I_{C(ON)}$	200		—	μA	$I_F = 20\text{ mA}$, $V_{CC} = 5.0\text{ V}$, $D = .050''$ ^(5,7)
Crosstalk	I_{CX}	—	200	—	nA	$I_F = 20\text{ mA}$, $V_{CC} = 5.0\text{ V}$, $E_e = 0$ ⁽⁶⁾
Saturation Voltage	$V_{CE(SAT)}$	—		0.40	V	$I_F = 40\text{ mA}$, $I_C = 100\text{ }\mu\text{A}$, $D = .050''$ ^(5,7)

NOTES

1. Derate power dissipation linearly 1.25 mW/ $^\circ\text{C}$ above 25°C .
2. RMA flux is recommended.
3. Soldering iron tip $\frac{1}{16}''$ (1.6 mm) minimum from housing.
4. As long as leads are not under any stress or spring tension.
5. D is the distance from the sensor face to the reflective surface.
6. Crosstalk (I_{CX}) is the collector current measured with the indicated current on the input diode and with no reflective surface.
7. Measured using Eastman Kodak neutral white test card with 90% diffused reflectance as a reflecting surface.